DEPARTMENT OF HEALTH & HUMAN SERVICES
Centers for Medicare & Medicaid Services
7500 Security Boulevard
Baltimore, Maryland 21244-1850

Tracking Form for Applicants for New Technology Add-on Payments under the Acute Inpatient Prospective Payment System (IPPS)

1. Technology Name: **human B-type natriuretic peptide (hBNP)**

2. Manufacturer Name: **Scios**

3. Trade Brand of Technology: **Natrecor®**

4. Brief Description of Service or Device:

   Natrecor® is indicated for the intravenous treatment of patients with acutely decompensated congestive heart failure (CHF) who have dyspnea at rest or with minimal activity. The product was FDA approved for the treatment of acute congestive heart failure on August 10, 2001.

   It is a member of a new class of drugs, human B-type natriuretic peptide (hBNP), and is manufactured from E. coli using recombinant DNA technology. It binds to the particulate guanylate cyclase receptor of vascular smooth muscle and endothelial cells, leading to increased intracellular concentrations of guanosine 3'5'-cyclic monophosphate (cGMP) and smooth muscle cell relaxation. Cyclic GMP serves as a second messenger to dilate veins and arteries.

   The recommended dose of Natrecor® is an IV bolus of 2 μg/kg followed by a continuous infusion at a dose of 0.01 μg/kg/min. Natrecor® is supplied as a sterile lyophilized powder in 1.5 mg single-use vials.

New Criteria

Note: To qualify for a new technology add-on payment, the technology or service must not be reflected in the data used to establish the diagnosis related groups (DRGs).

5. Date of Food and Drug Administration (FDA) approval (or expected approval) for the device or service:

   Natrecor® received FDA approval on August 10, 2001. The first commercial shipments of Natrecor® were released on August 15, 2001.

6. Does the technology have an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure code(s) or is an application pending?

The drug has an International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure code.

a. If yes, please provide the ICD-9-CM procedure code(s) used to identify the clinical procedure(s) with which the medical service and technology is used.

Effective October 1, 2002, infusion of Natrecor® was assigned a unique ICD-9-CM procedure code: 00.13—Injection or infusion of nesiritide.

b. If there is no existing ICD-9-CM code that captures this new technology, please indicate whether you will be applying for a new code. (Refer to http://www.cms.hhs.gov/paymentsystems/icd9 for more information.)

7. Have you submitted an application for outpatient pass-through payments under the Medicare outpatient prospective payment system? If so, please provide the tracking number or, if it was approved, please provide the date of approval. (Please refer to http://cms.hhs.gov/providers/hopps/apc.asp for more information.)

Effective April 1, 2002 CMS granted Natrecor® pass-through status through the use of a temporary code—C9114---nesiritide, per 1.5 mg vial. Effective January 1, 2003, CMS granted Natrecor® a permanent HCPCS code (J2324—Injection, nesiritide, 0.5mg) which replaced temporary code C9114. This code maps to APC 9114.

Cost Criteria

Note: To qualify for a new technology add-on payment, the technology or service must result in average charges for cases using the technology in excess of 75 percent of one standard deviation above the average charges for the DRG(s) to which the technology or service is assigned.

Provide the following information to demonstrate the technology or service meets the criterion.

8. What is the anticipated average standardized charge per case involving this new technology? For details how to standardize charges please refer to the technical appendix of the application form.

Proprietary information provided in application to CMS.

9. What is the total estimated cost per case for the service or technology (this will include all costs involved in the case, including the cost of the service or device)? What is the cost of the technology per patient? Please provide a breakdown how the cost of the technology is calculated (i.e. **Drugs**- Average dosage or number of units per patient (ml/kg/hr); **Devices**- breakdown of the cost of all components used in the new technology).

Proprietary information provided in application to CMS.

10. List the diagnosis-related groups (DRGs) to which cases involving this new technology will most likely be assigned. **(see below)**

11. What is the anticipated volume of Medicare cases involving of this technology (by DRG)?

Based on the Premier database, there are approximately 154 DRGs affected by the Natrecor technology. Approximately 48 percent of the cases were assigned to DRG 127. Roughly 71 percent of the cases were assigned to seven DRGs: 127, 121, 124, 89, 475, 123, 483 and 107. (See table below).

DRG	DRG Title	Medicare Patient Count	% of all cases with known DRG
127	Heart failure and shock	2374	48%
121	Circulatory disorders with acute myocardial infarction and major complications discharged alive	380	8%
124	Circulatory disorders except acute myocardial infarction, with cardiac catheterization and complex diagnosis	225	5%
89	Simple pneumonia and pleurisy, age greater than 17 with CC	145	3%
475	Respiratory system diagnosis with ventilator support	144	3%
123	Circulatory disorders with acute myocardial infarction, expired	101	2%
483	Tracheostomy except for face, mouth and neck diagnoses	100	2%
107	Coronary bypass with cardiac catheterization	78	2%
Multiple	147 other DRGs (each less than or equal to 1%)	1448	29%

Clinical Improvement

Note: To qualify for a new technology add-on payment, the technology or service must represent a substantial clinical improvement over existing technologies or services

12. Please provide a short synopsis of the following clinical issues added to the new technology. Use the regular application to submit full details.

    a. Briefly describe how the new service or technology represents a substantial clinical improvement over existing services or technologies:

Natrecor is a substantive leap forward in the management of acute heart failure. Natrecor offers: a) novel clinical effects not achieved by any other acute CHF treatment; b) reduced complications compared to current acute CHF treatments; and, c) improved clinical outcomes compared to current acute CHF treatments. Details regarding these benefits are reviewed in the attachments that accompany the application to CMS.

b. List of published peer-review articles relevant to the new service or technology.

Keating GM, Goa KL. "Nesiritide: A Review of its Use in Acute Decompensated Heart Failure" *Drugs* 2003; 63(1): 47-70

Burger AJ, Horton DP, LeJemtel T, et al. "The Effect of Nesiritide (B-Type Natriuretic Peptide) and Dobutamine on Ventricular Arrhythmias in the Treatment of Patients with Acutely Decompensated Congestive Heart Failure: The PRECEDENT Study" *American Heart Journal* 2002; 144(6): 1102-1108

Elkayam U, Akhter MW, Tummala P, et al. "Nesiritide: A New Drug for the Treatment of Decompensated Heart Failure" *Journal of Cardiovascular Pharmacology and Therapeutics* 2002; 7(3): 181-194

Publication Committee for the VMAC Investigators. "Intravenous Nesiritide vs. Nitroglycerin for Treatment of Decompensated Congestive Heart Failure -A Randomized Controlled Trial" *Journal of the American Medical Association* 2002; 287(12): 1531-1540

Silver MA, Horton DP, Ghali JK, Elkayam U. "Effect of Nesiritide Versus Dobutamine on Short-Term Outcomes in the Treatment of Patients with Acutely Decompensated Heart Failure" *Journal of the American College of Cardiology* 2002;39(5):798-803

Colucci WS, Elkayam U, Horton DP, et al. "Nesiritide for the Treatment of Decompensated Heart Failure." *The Journal of Cardiac Failure* 2001; 7(1):92-100

Colucci WS, Elkayam U, Horton DP, et al. "Intravenous Nesiritide, A Natriuretic Peptide, in the Treatment of Decompensated Congestive Heart Failure." *Journal of Cardiac Failure* 1998; 4:37-44The New England Journal of Medicine 2000; 343(4):246-253

Mills RM, LeJemtel TH, Horton DP, et al. "Sustained Homodynamic Effects of an Infusion of Nesiritide (Human B-Type Natriuretic Peptide) in Heart Failure: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial. Natrecor Study Group." *Journal of the American College of Cardiology* 1999; 34:155-62

Abraham WT, Lowes BD, Ferguson DA, et al. "Systemic Hemodynamic, Neurohormonal, and Renal Effects of a Steady-State Infusion of Human Brain Natriuretic Peptide in Patients with Hemodynamically Decompensated Heart Failure." *Journal of Cardiac Failure 1998*; 4:37-44

Hobbs RE, Miller LW, Bott-Silverman C, James KB, Rincon G, Grossbard EB. "Hemodynamic Effects of a Single Intravenous Injection of Synthetic Human Brain Natriuretic Peptide in Patients with Heart Failure Secondary to Ischemic or Idiopathic Dilated Cardiomyopathy." *American Journal of Cardiology* 1996; 78:896-901.

Marcus LS, Hard D, Packer M, et al. "Hemodynamic and Renal Excretory Effects of Human Brain Natriuretic Peptide Infusion in Patients with Congestive Heart Failure. A Double-Blind, Placebo-Controlled, Randomized Crossover Trial." *Circulation* 1996; 94:3184-9.

Butler J, et al. " The Efficacy and Safety of B-type Natriuretic Peptide (nesiritide) in Patients with Renal Insufficiency and Acutely Decompensated Congestive Heart Failure." Nephrology, Dialysis and Transplantation 2004 In Press.